UNITED STATES SPECIAL OPERATIONS COMMAND

Proposal Submission

The United States Special Operations Command's (USSOCOM) missions include developing and acquiring unique special operations forces (SOF) equipment, material, supplies and services. Desired SOF operational characteristics for systems, equipments and supplies include: lightweight and micro-sized; low signature and low observable; built-in survivability; modular, rugged, reliable, maintainable and simplistic; operable in extreme temperature environments; water depth and atmosphere pressure proof; certified transportable by aircraft, ship and submarine, and deployable by paradrop; LPI/LPD jam resistant C3; electronic warfare capable of disruption and deception; near real-time surveillance and intelligence; highly lethal and destructive; and compatible with conventional force systems. USSOCOM is therefore seeking small businesses with a strong research and development capability and understanding of the necessity for consideration of these SOF operational characteristics for systems. The topics on the following pages represent an introduction to a portion of the problems encountered by the SOF in fulfilling its mission.

USSOCOM invites the small business community to send its proposals directly to the following address:

United States Special Operations Command
Attn: SOKS/SBIR Program, Topic No. SOCOM93-_____
2408 Florida Keys Ave
MacDill Air Force Base, Florida 33621-5316

The proposals will be processed, then distributed to the appropriate technical office for evaluation. Inquiries of a general nature or questions concerning the administration of the SBIR program and proposal preparation should be addressed to:

United States Special Operations Command
Attn: Ms. Paulette Widmann
2408 Florida Keys Ave
MacDill Air Force Base, Florida 33621-5316
Tel: (813) 840-5443

The USSOCOM has identified three technical topics for its first SBIR Solicitation participation, to which small businesses may respond. The topics listed are the only topics for which proposals will be accepted. The topics were initiated by USSOCOM technical offices that manage the research and development in these areas. No direct communication with the topic author is possible.

Selection of proposals for funding is based upon technical merit and the evaluation criteria included in this solicitation. As funding is limited, USSOCOM reserves the right to select and fund only those proposals considered to be superior in overall technical quality and most critical. As a result, USSOCOM may fund more than one proposal in a specific topic area if the technical quality of the proposals are deemed superior, or it may fund no proposals in a topic area.

SUBJECT/WORD INDEX TO THE SOCOM SBIR SOLICITATION

Index of U.S. Special Operations Command FY93 Topics

SOCOM93-001TITLE: Aluminum Air Battery for Communications Equipment

CATEGORY: Advanced Development; Electrochemical Energy Conversion

OBJECTIVE: To design and demonstrate a reusable, mechanically rechargeable battery for potential use by SOF personnel in remote ground activities.

DESCRIPTION: Presently, batteries used for communications gear, etc., use conventional battery types (i.e., lithium sulfur-dioxide, nickel-cadmium) which do not store enough energy to complete the mission without replacement. This requires SOF personnel to carry extra batteries which significantly contributes to the weight and volume of their backpack load.

The offeror should design and demonstrate a battery and recharge kit using Aluminum/Air chemistry. The battery shall be mechanically rechargeable (by electrode and/or electrolyte replacement) in remote field conditions. The battery and recharge kit shall have a significantly greater energy storage density (both by weight and volume) than Nickel-Cadmium and Lithium Sulfur-Dioxide batteries. The battery should be of the voltage and peak power delivery capability as the military type BA-5590 and BB-590 batteries. The battery shall be safer; and easier to transport, handle and dispose of than Lithium Sulfur-Dioxide batteries.

Phase I: Develop and document battery design.

Phase II: Refine design, build development models and test in laboratory and field conditions.

Phase III: Produce batteries for use in military man-pack radios used by Army and Navy SOF forces as well as Army and Marine Conventional forces. Commercial, non-military applications exist in electric vehicles.

SOCOM93-002TITLE: Very Shallow Water Mine Countermeasures

CATEGORY: Advanced Development, Bottom Mapping and Profiling

OBJECTIVE: To design and demonstrate a family of equipment to be used by Navy SEALs to find and neutralize underwater mines in very shallow water.

DESCRIPTION: Naval Special Warfare is developing and testing sensors, equipment and tactics to enhance the ability to locate and neutralize anti-invasion mines in the very shallow water maritime environment, over large areas in minimal time. Requirements exist for the following:

a. Enhanced real-time sonar signal processing techniques in side-scan sonars to incorporate modifications to include a true "zoom"; to select frequency, repetition rate, and beam width to match screen resolution to acoustic resolution (100% coverage, resolving a 1 sq ft object at 100yd) at a speed of 6-10 knots; and to incorporate positional data from GPS (or other) to an operator-designated cursor position for storage of object position. Testing conducted during 1992 demonstrated the ability of side scan sonars to support a wide area search to detect mine shapes in water depths as shallow as 6 feet and highlighted the shortfalls in signal processing and display associated with sensors optimized for the location of large objects in deep water.

b. A multi-beam side scan sonar that can be rigidly attached to the keel of a small boat to perform wide area searches for mine like objects at higher speeds than single beam side scan sonars are capable of. The sonar frequency, pulse width and repetition rate, beam width, and screen pixel display resolution must be chosen to optimize the performance of the system to locate mine size targets at a nominal range of 100 yd in water depths from 6-21 ft. The system must be fully operable at speeds between 3-10 knots in sea state III, from a 24 ft rigid inflatable boat.

c. A high-resolution handheld sensor to detect and image bottom targets to a combat swimmer at safe standoff ranges. Specifically an acoustic lens array and display system is required to provide resolution of less than 3 in, at a range of 20 yds, with a field of view of approximately 45 deg horizontally by 10 deg vertically.

d. A small device that would detonate the mine's explosive material within the mine would decrease the equipment the combat swimmer needs to carry. The device would shoot a projectile/detonator that penetrates the mine case and detonates the explosive within the mine after the swimmer had cleared the area. The neutralization system should weigh less than 5 pounds in air and should be effective when placed as far as 16 inches away from the mine case.

Phase I: Analyze requirements and develop prototype design for one or more of the above devices.

Phase II: Build an advanced development model(s) of the equipment. Perform laboratory tests and field tests on the equipment to determine their effectiveness.

Phase III: Design and build production prototypes to be used by Navy divers performing mine clearance missions. Units could also be used by military or commercial divers performing underwater salvage and recovery.

SOCOM93-003TOPIC: Imagery/High-Speed Fleet Broadcast Receive Only Capabilities for MATT

CATEGORY: Engineering Development; Radio Frequency Communications/Data Acquisition and Conversion

OBJECTIVE: Design and develop upgrade kits for the Multi-Mission Advanced Tactical Terminal (MATT).

DESCRIPTION: Design, develop, and test hardware and software modules which can be added to the core MATT configuration to receive, demodulate, deinterleave, decode, decrypt, and process imagery and high-speed fleet broadcast data. The deliverables will be imagery and high-speed fleet broadcast hardware and software in SEM-E configuration plus a set of software configuration items. The design of the modules will be such that they do not in any way adversely effect the existing interfaces or system performance, and operate with the same interfaces. The modules will consist of kits that can be added to existing MATT units as a plug-in modification.

Phase I: Design a prototype kit.

Phase II: Fabricate, test and document prototype.

Phase III: Produce kits for MATT production units.